

PATENT ABSTRACTS OF JAPAN

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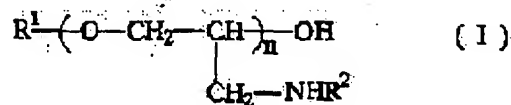
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(54) DETERGENT COMPOSITION

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a detergent composition excellent in the effect of preventing color-patterned clothing from being discolored or faded by repeated washing and highly effective to soften closing or the like.

SOLUTION: This composition contains (a) a compound represented by the general formula (I) and (b) a surfactant in a specified ratio. In the formula, R¹ is hydrogen or a 4-20C hydrocarbon group; R² is hydrogen, a 1-5C alkyl or hydroxyalkyl, or -(CH₂CH₂NH)_mH, wherein m=1-10; and n is a number of 1-5. Desirably, the composition comprises 0.1-10 wt.% compound (a) and 5-60 wt.% surfactant (b).



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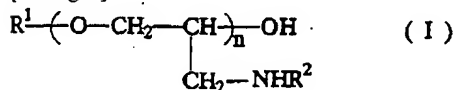
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CLAIMS

[Claim]

[Claim 1] (a) The cleaning agent constituent which contains the compound 0.1 expressed with the following general formula (I), - 5 - 60 % of the weight of (b) surfactants with 10 % of the weight.

[izing 1]



the inside of [formula, and R1 -- a hydrogen atom or the hydrocarbon group of carbon numbers 4-20, and R2 -- a hydrogen atom, the alkyl group of carbon numbers 1-5, a hydroxyalkyl machine, or - (CH₂CH₂NH) -- mH (m=1-10) and n show the number of 1-5]

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DETAILED DESCRIPTION

[Detailed description]

[0001]

[The technical field to which invention belongs] this invention relates to a cleaning agent constituent.

[0002]

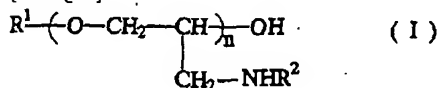
[A Prior art and Object of the Invention] The strange tenebrescence of the textiles at the time of wash poses the problem. In order that the strange tenebrescence of textiles may be considered that the residual chlorine used for the disinfection in city water has influenced and may remove these influences, the study which blends an ammonium sulfate etc. with a detergent is performed (the publication number 53698 eight to), ***** of No. 507745 [five to], Provisional Publication No. 263296 [62 to], Provisional Publication No. 44599 [60 to]). However, in accumulation washing which these strange tenebrescences inhibitor cannot flow out at a rinse process to the influence of the textiles on the residual chlorine in city water rinsing, and acting also on inside, and cannot demonstrate sufficient effect, especially repeats wash repeatedly, it was inadequate. When accumulation washing especially of the technical problem of this invention is carried out, it is offering the cleaning agent constituent with the high strange tenebrescence prevention effect.

[0003]

[The means for solving a technical problem] this invention relates to the cleaning agent constituent containing the compound 0.1 expressed with the (a) following general formula (I), - 5 - 60. % of the weight of (b) surfactants with 10 % of the weight.

[0004]

[-izing 2]



[0005] the inside of [formula, and R1 -- a hydrogen atom or the hydrocarbon group of carbon numbers 4-20, and R2 -- a hydrogen atom, the alkyl group of carbon numbers 1-5, a hydroxyalkyl machine, or - (CH₂CH₂NH) -- mH (m=1-10) and n show the number of 1-5]

[0006]

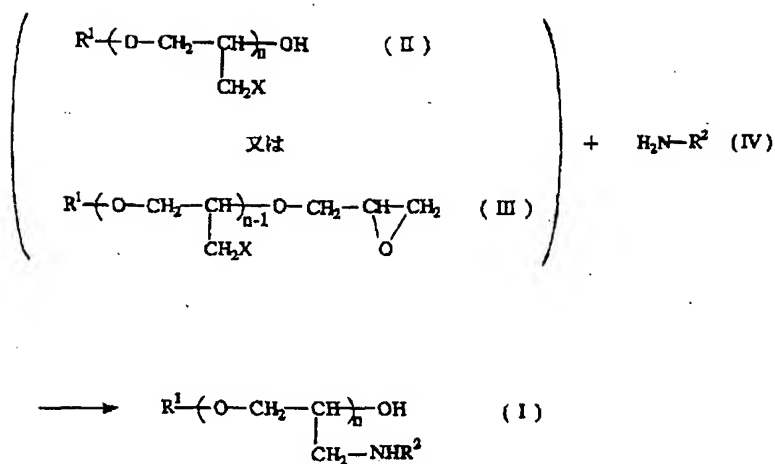
[Gestalt of implementation of invention] In (a) component of this invention, R1 in a general formula (I) has desirable carbon numbers 12-20, especially the alkyl group of carbon numbers 14-18 is desirable, R2 has a hydroxyethyl machine or desirable -CH₂CH₂NH₂, as for n, 1 or 2 is desirable, and especially 1 is desirable. Moreover, from the point of flexibility, R1 has desirable carbon numbers 14-20, and especially its alkyl group of carbon numbers 16-18 is desirable. the point of a stability to the inside R1 of a formula -- carbon numbers 4-10 -- desirable -- especially -- the alkyl group of carbon numbers 5-8 -- desirable -- the balance of R1, R2, and n -- X/(Yxn) = 0.1-20 -- desirable -- further -- 1-10 -- especially 1-5 are desirable Here, X shows the carbon atomic number in R1, and Y shows the nitrogen atomic number and carbon atomic number in NHR₂.

[0007] (a) component of this invention is preferably blended one to 10% of the weight 0.1 to 10% of the weight into a cleaning agent constituent. (a) Excel in the strange tenebrescence prevention effect of the textiles at the time of accumulation washing by combination of a component, and the flexibility to clothing etc. improves.

[0008] The compound expressed with a general formula (I) can be manufactured according to the following. That is, preferably, 150 degrees C is 50 degrees C to 100 degrees C more preferably from 10 degrees C, and a general formula (II) or (III) the compound shown, and the compound shown by the general formula (IV) can be manufactured by making it react from 0.5 hours preferably for 5 hours. In this case, ****'s for the one to ten mol equivalents is desirable to a general formula (II) or (III) the compound shown in the compound shown by the general formula (IV), and ****'s for the two to five mol equivalents is still desirable. Moreover, the technique of trickling a general formula (II) or (III) the compound shown into the compound shown by the general formula (IV) is more desirable.

[0009]

[-izing 3]



[0010] R1, R2, and n show the same meaning as the above among [formula. X shows a halogen atom.]

The reaction end article obtained by the above-mentioned technique can also be used as it is, and may distill off with a topping the compound shown by the superfluous general formula (IV) if needed.

[0011] In addition, a general formula (II) or (III) the compound shown can be manufactured by the following technique. For example, it is a formula (V) when manufacturing the halohydrin compound shown by the formula (II).

R1OH (V) (R1 is the same as that of the above)

It can come out and the alcohol and epihalohydrin which are expressed can be obtained using mineral acids, such as a sulfuric acid, or a Lewis-acid catalyst like BF3O (CH2CH3)2. Moreover, when manufacturing the epoxy compound shown by the formula (III), it can obtain by carrying out the ring closure of the halohydrin compound (II) obtained by the above-mentioned technique by alkali, and can obtain also by making the alcoholic compound and epihalohydrin of a formula (V) react under an alkali catalyst and correlation move catalyst presence.

[0012] Moreover, the surfactant known conventionally can be used as a (b) surfactant of this invention. In addition, when raising washing nature, as for a surfactant, it is desirable to use an anionic surfactant and a nonionic surface active agent as a main surfactant. In order to raise flexibility further, when using together with a cationic surfactant, it is desirable to use a nonionic surface active agent as the main surfactant. In this invention, (b) component is preferably blended ten to 50% of the weight five to 60% of the weight among a constituent. Here, the proportion of (a) component and (b) component is the point of economical efficiency, and it is desirable (a) / (b) = 1 / 100 - 1/1, and that it is especially 1 / 30 - 1/5 at a mole ratio.

[0013] As an anionic surfactant, alkali-metal salts, such as a linear-alkyl-benzene sulfonate, an alkyl-sulfuric-acid ester salt, a polyoxyalkylene alkyl or an alkenyl ethereal-sulfate salt, and an alpha sulfo aliphatic alkylester salt, are desirable, and may carry out little combination of beef tallow or the fatty-acid salt of the palm origin. Although alkanolamines, such as alkaline earth metal, such as magnesium, and/or monochrome, **, and a triethanolamine, etc. are used as a counter-ion of an anionic surfactant in addition to alkali metal, such as sodium and a potassium, it is suitable from liquid-ammonia quality improving by using especially an alkanolamine. In this case, especially the loadings of an anionic surfactant have 2 - 50 desirable % of the weight one to 50% of the weight in a cleaning agent constituent.

[0014] Since adsorption in clothing is promoted when it uses together with an anionic surfactant, the color-fade-out prevention effect of (a) component of this invention improves further. (a) As for the proportion of a component and an anionic surfactant, (a) / anionic surfactant = 10 / 1 - 1/10 are desirable at a mole ratio, and especially 3 / 1 - 1/3 are desirable.

[0015] Moreover, as a nonionic surface active agent, a thing like following the (1) - (4) can be used.

(1) The polyoxyethylene alkyl or the alkenyl ether with which a mean carbon number has the alkyl group of the alkyl group of 8-20 or the 1st class of an alkenyl machine, for example, a straight chain, and the origin 2nd class alcoholic [of a straight chain], the alkyl group of the branched chain alcoholic origin, or an alkenyl machine, and added 1-20 mols for the ethyleneoxide (following EO) on the average.

(2) The polyoxyalkylene alkyl or the alkenyl ether with which the mean carbon number had the alkyl group or alkenyl machine of 8-20, and added EO on the average and it added 1-15 mols and 1-5 mols (following PO) of propylene oxides on the average. In this case, random addition, block addition, or any is sufficient as EO and PO.

(3) The sugar or the polysaccharide surfactant expressed with the following general formula (VI).

R21-(OR22)xGy (VI)

The residue and x to which in R21 the alkyl group of the hydrocarbon group of carbon numbers 8-18, for example, a straight chain, and branched chain, an alkenyl machine or an alkylphenyl machine, and R22 originate in the alkylene machine of carbon numbers 2-4, and G originates in the carbon number 5 or the reducing sugar of 6 show the number of the averages 0-6 among [formula, and y shows the number of the averages 1-10.]

(4) Fatty acid alkanolamide, a polyhydroxy fatty-acid amide.

[0016] Especially, (1) or (2) are desirable in respect of an oily dirt detergency. Moreover, especially the loadings in the cleaning agent constituent of a nonionic surface active agent have 10 - 50 desirable % of the weight five to 50% of the weight.

[0017] Furthermore, especially in order to carry out on the flexible disposition to clothing etc., it is desirable to blend cationic surfactants,

such as monochrome length chain alkyl quarternary ammonium salt, one to 5% of the weight 0.5 to 10% of the weight into a cleaning agent constituent. In respect of the flexible disposition top effect, carbon numbers 12-22 and the monochrome length chain trimethylammonium salt which is especially the alkyl group of 14-20 have a desirable long chain alkyl group. As a counter-ion of a cationic surfactant, a halogen atom, CH_3SO_4 , $\text{C}_2\text{H}_5\text{SO}_4$, CH_3COO , or HCOO is desirable. Furthermore, in order to raise flexibility, it is desirable a cationic surfactant / anionic surfactant = 3 / 1 - 1/2, and to blend especially a cationic surfactant by the mole ratio of 2 / 1 - 1/2 to an anionic surfactant.

[0018] Furthermore, in respect of the stability of liquid, and mud dirt washing nature, you may blend an amphoteric surface active agent. Alkyl carboxylate, alkyl sulfobetaine, alkylamide hydroxy sulfobetaine, an alkylamide amine type betaine, an alkyl imidazoline type betaine, etc. can be blended as an amphoteric surface active agent.

[0019] Furthermore, in order to raise a feeling, it is desirable to blend flexible bases, such as silicone of claim 1 publication of a publication-number 60480 [ten to] official report, 0.1 to 2% of the weight. In the cleaning agent constituent of this invention, furthermore, the hydroxide of alkali metal, a silicate, Alcohols [such as alkali-chemicals 0.01-10 % of the weight; ethanol], such as carbonates, such as a sodium carbonate, and an alkanolamine, Glycols, such as ethylene glycol and a propylene glycol, Para toluenesulfonic acid, The adhesiveness-reducing agent and 0.01 - 30 % of the weight; polyoxyalkylene benzyl ethers of solubilizing agents, such as a benzoate (there is an effect as antiseptics), and a urea, The phase regulator and 0.01 - 10 % of the weight; nitrilotriacetic acid salts of detergency improvers, such as a polyoxyalkylene phenyl ether, An ethylenediaminetetraacetic acid salt, an iminodiacetic-acid salt, a diethylenetriamine pentaacetic acid salt, Amino poly acetate, such as a glycol-ether diamine tetraacetic-acid salt, a hydroxyethyl iminodiacetic-acid salt, and triethylenetetramine 6 acetate, Metal-ion scavenger 0.1-20 % of the weight; polyacrylates, such as salts, such as a malonic acid, a succinic acid, a diglycolic acid, a malic acid, a tartaric acid, and a citric acid Polymer lane acid chloride, a carboxymethyl cellulose, a with an average molecular weight of 5000 or more polyethylene glycol, An acrylic-acid-maleic-acid copolymer, a maleic-anhydride-diisobutylene copolymer, A maleic-anhydride-methyl-vinyl-ether copolymer, a maleic-anhydride-isobutylene copolymer, Maleic-anhydride-vinyl acetate copolymers and these salts, a naphthalene sulfonate formalin condensate, And the 0.01 - 10 % of the weight; fault sodium carbonates of; (resoling inhibitor and 0.01 - 10 % of the weight of dispersants) colors change inhibitors, such as a polyvinyl pyrrolidone, such as a polymer of one to claim 21 (3 - of five lines pages four card columns of 14 lines of 1 page three card columns) publication of a Provisional-Publication-No. 62614 [59 to] official report Or the 0.01 - 10 % of the weight; tetrapod acetyl ethylenediamine of bleaching agents, such as a sodium perborate, The bleaching activator 0.01-10 % of the weight; amylases shown by general formula [of the publication number 316700 / six to] (1-2) - (1-7), such as a bleaching activator, Enzyme 0.001-2 % of the weight; calcium chlorides, such as a protease, a pectinase, lipase, and a cellulase, A calcium sulfate, a formic acid, A boric acid Defoaming-agent 0.01-2 % of the weight; butylhydroxytoluene [such as a fluorescent-dye 0.001-1 % of the weight; silica], such as enzyme stabilizing-agent 0.001-2 % of the weight; Tinopal CBS (tiba speciality chemicals company make), ***** tex SA (Sumitomo Chemical Co., Ltd. make), etc. of a grade, (Boron compound) The 0.01 - 2 % of the weight; blueing agent; perfume; antibacterial antiseptics of antioxidants, such as *****-ized cresol, a sodium sulfite, and a sodium hydrogensulfite, etc. can be blended. The cleaning agent constituent of this invention consists of the above (a) and (b), an arbitrary component, and water of the remainder.

[0020]

[Effect of the invention] The cleaning agent constituent of this invention is excellent in the strange tenebescence prevention effect of the colored pattern garments by accumulation wash, and has the characteristic feature of also giving the flexibility to clothing etc.

[0021]

[Example] The synthetic example 1 (synthesis of compound a)

First, the temperature up was carried out to 90 degrees C, having put octyl alcohol 231g (1.78 mols), aluminum ***** propoxide 3.61g (17.7mmol), and 9.40g (5.4 mols) of p-phenolsulfonic acids into 1L ** flask, and agitating them. Furthermore, the temperature up was carried out to 100 degrees C after bottom (200mmHg) 1 hour churning of reduced pressure, epichlorohydrin 170g was dropped in 30 minutes, and octyl glycidyl ether was obtained by agitating further.

[0022] Subsequently, after teaching ethanolamine 66.0g (1.08 mols) to four 300mL **s opening flask, the temperature up was carried out to 70 degrees C. Next, octyl glycidyl ether 50.0g (0.27 mols) was dropped over 2 hours, and it agitated as it is at 70 degrees C for 2 hours. The invert ratio of the octyl glycidyl ether of a raw material was 100%. The superfluous ethanolamine was distilled off after a reaction end and under reduced pressure, and 65g of 1 and 5-dihydroxy-3-****-7-***** pentadecanes was obtained (yield:98%).

[0023] The synthetic example 2 (synthesis of compound b)

In the synthetic example 1, hexadecyl glycidyl ether was similarly obtained except using a hexadecyl alcohol instead of octyl alcohol.

[0024] Subsequently, after teaching ethylenediamine 230g (3.83 mols) to four 500mL **s opening flask, the temperature up was carried out to 70 degrees C. Next, hexadecyl glycidyl ether 80.0g (0.29 mols) was dropped over 2 hours, and it agitated at 80 degrees C after that for 6 hours. The invert ratio of the hexadecyl glycidyl ether of a raw material was 100%. Superfluous ethylenediamine is distilled off after a reaction end and under reduced pressure, and it is 1-amino. -90g of 5-hydroxy-3-****-7-***** tricosanes was obtained (yield:93%).

[0025] The liquid cleaning agent constituent shown in example 1 table 1 was prepared, and strange tenebescence tightness evaluation, following flexibility evaluation, and following liquid-ammonia quality evaluation were performed using the obtained constituent. The result is shown in Table 1.

[0026] [Evaluation of strange tenebescence tightness]

** As examination cloth examination cloth, the cloth which cotton broadcloth 2023 cloth was dyed in the color Cibacron Blue F-GFN(tiba speciality chemicals company make)5% aqueous solution was used.

[0027] ** Prepare a washing condition 2 tub type washing machine (Toshiba Galaxy 3.6 VH-360S1), put 20 degree-C city water of 40L into a wash tub, and put the 1.4kg non-worn underwear made from a gossypium, and the non-worn shirt of 0.6kg a gossypium / polyester

mix spinning into this. One thing which sewed five examination cloths for evaluation on is prepared for a 30x30cm cheesecloth, it puts into a wash tub, the liquid cleaning agent constituent of Table 1 is put in further 26.67 mLs, and it usually washes for 10 minutes. It dehydrates after that for 1 minute, and, for the reason during 4 minutes, a rinse is repeated twice. Indirect-desulfurization water is carried out after that for 5 minutes, and an air drying is carried out indoors. This process was made into one process and accumulation washing was performed 5 times.

[0028] ** The colorimetry technique colorimetry carried out the colorimetry of L value, a value, and the b value using the color difference meter (Japanese **** industrial, Inc. ND(F)-300A), and calculated delta E value by the following formula. The strange tenebrescence to which accumulation washing requires delta E value as the parvus means a few thing.

$\Delta E = \{(\Delta L)^2 + (\Delta a)^2 + (\Delta b)^2\}^{1/2}$; (L value of the cloth after washing) - (L value of the cloth before washing)

Δa ; (a value of the cloth after washing) - (a value of the cloth before washing)

Δb ; (b value of the cloth after washing) - (b value of the cloth before washing)

[0029] [Evaluation of flexibility]

** Prepare the manufacture 2 tub type washing machine (Toshiba Galaxy 3.6 VH-360S1) of a pretreatment cloth, put the city water of 40L into a wash tub, and mix and put in a cotton towel, cotton Meliae a non-worn underwear, and acrylic jersey so that it may become a total of 2.0kg at this. Furthermore, a compact-type powder detergent is thrown in according to the amount of the canonical used, and a stream rinse is dehydrated and carried out wash, one part for 8 minutes for 10 minutes (amount of water for 15L), and it is made to dry with a dryer. This wash cycle is repeated 5 times and it considers as a pretreatment cloth.

[0030] ** Put the city water of 30L into the wash tub of the appraisal method above-mentioned washing machine, and put in two cotton towels, cotton Meliae two non-worn underwears, and one acrylic jersey among the pretreatment cloths for flexibility evaluation.

Furthermore, the liquid cleaning agent constituent of Table 1 is put in 20 mLs, and is usually washed for 10 minutes. Next, indirect-desulfurization water is carried out for 1 minute, and with the city water of 30L, for a reason, it rinses twice [during 5 minutes / x], and carries out. Indirect-desulfurization water was carried out to the last for 1 minute, the air drying was carried out indoors, and the standing between days was carried out to the air conditioned room of RH 20 degrees C / 65%.

[0031] ** The score was carried out as following by comparing non-washed elegance with a feel, respectively about a total of five sheets of two flexibility criterion cotton towels, cotton Meliae two non-worn underwears, and one acrylic jersey.

未洗浄品に比べかなり柔らかい ; + 2 点

未洗浄品より柔らかい ; + 1 点

未洗浄品と変わらない ; 0 点

The above score is performed by five skilled panelists and compared flexibility by the average mark of the totaling point of a total of five judged clothing.

[0032] After having carried out 40mL restoration of the liquid cleaning agent constituent of Table 1 and making a lid the sample bottle (cylindrical shape with a No.6 wide-mouth specification bottle, the product made from glass, a diameter [of 40mm], and a height of 80mm) of [evaluation of liquid-ammonia quality] 50mL, the standing was carried out for 30 days by the thermostatic chamber (5 degrees C and 25 degrees C). The stability of a liquid judged the appearance visually and made "x" what separated or separated what is a uniform liquid phase 5 degrees C and 25 degrees C also with "O", which, or the single-threaded affair.

[0033]

[Table 1]

| | | 本 発 明 品 | | | | 比 較 品 | |
|---------------|---------------------------|---------|-----|-----|-----|-------|-----|
| | | 1 | 2 | 3 | 4 | 1 | 2 |
| 配合成分 (重量%) | 化合物a | 5 | | | 3 | | |
| | (a) 化合物b | | 4 | 2 | 2 | | |
| | 化合物c | | | | | | 5 |
| | 非イオン界面活性剤d | 20 | 20 | 18 | 18 | 15 | 18 |
| | 非イオン界面活性剤e | 15 | | | | 15 | |
| | (b) 非イオン界面活性剤f | | 15 | 17 | 17 | | 17 |
| | 陽イオン界面活性剤g | 3 | | | | | |
| | LAS-S剤 | 3 | 3 | | 3 | 3 | 3 |
| | モノエタノールアミン | | | 2 | | | |
| | プロピレングリコール | 5 | 7 | 5 | 5 | 5 | 5 |
| | エタノール | 1 | 1 | 1 | 1 | 1 | 1 |
| | 亜硫酸ナトリウム | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| | 水 | 残部 | 残部 | 残部 | 残部 | 残部 | 残部 |
| | 合計 | 100 | 100 | 100 | 100 | 100 | 100 |
| 評価結果 | 変褐色防止性 (ΔE 値) | 8 | 5 | 7 | 6 | 14 | 20 |
| | 柔軟性 | 8 | 8 | 6 | 6 | 3 | 7 |
| | 液安定性 | ○ | ○ | ○ | ○ | ○ | × |

[0034] As for the constituent of Table 1, what ** also adjusted pH to 10.5 by the sodium hydroxide or the hydrochloric acid. Moreover, the component in Table 1 is as follows.

- Compound a: 1, 5-dihydroxy -3 which were obtained in the synthetic example 1 - 1-amino-5-hydroxy-3-****-7-***** tricosane and compound c:N, and N-dimethyl stearyl amine and nonionic surface active agent dobtained in the ****-7-***** pentadecane and the example 2 of compound b:synthesis : To the straight chain primary alcohol of carbon numbers 10-14, EO For EO an average of five mols and PO to the straight chain primary alcohol of the thing and the nonionic surface active agent f:carbon numbers 10-14 which made an average of 12 mols of EOs add to the branched chain secondary alcohol of the thing and the nonionic surface active agent e:carbon numbers 10-14 made to add an average of eight mols An average of two mols, the thing and cationic surfactant which made an average of three-mol order carry out block addition of the EO -- g:monochrome length chain alkyl (proportion of carbon-numbers 16/18 and carbon numbers 16 and 18 is 3/7) trimethylammonium chloride, and a LAS-S agent -- the linear-alkyl-benzene sulfonic acid of the :carbon numbers 10-14

[Translation done.]

